Contingency and Consequence Management Planning for Year 2000 Conversion

A Guide for State and Local Emergency Managers

February 1999

TABLE OF CONTENTS

LIST OF TABLES

The Federal Emergency Management Agency (FEMA) has produced this guide to help State and local emergency managers meet the Year 2000 (Y2K) challenge by developing effective contingency plans. The National Emergency Management Association and the International Association of Emergency Managers provided helpful advice in the development of this guide.

Other information sources used include:

American Red Cross

Chief Information Officers Council Committee on Year 2000

Commonwealth of Pennsylvania and the Government of Canada

Environmental Systems Research Institute, Inc.

Gartner Group

General Accounting Office

League of Minnesota Cities

Metropolitan Washington Council of Governments

President's Council on Year 2000 Conversion

State of Florida Year 2000 Project Office

State of Kansas, Department of Administration, Division of Information Systems and Communications

State of Minnesota, Department of Public Safety, Division of Emergency Management

State of New Hampshire, Office of Emergency Management

State of Texas, Department of Information Resources

Many other States, municipalities, Federal agencies, and private organizations have developed helpful Y2K publications or web sites. The web sites listed in this guide will link you to basic information that is currently available. New sites are constantly appearing and old sites are sometimes changed, so be sure to keep checking for useful information. You can also call **1-888-USA-4-Y2K** for information on a range of topics.

The approaches described in this guide are recommendations, not regulations. Following them will not, in itself, ensure compliance with any applicable Federal, State, or local regulations. Nor will it ensure that you will not experience Y2K disruptions.

If you are just starting to address the Y2K problem in your State or communities, *Section 1, Getting Started,* provides a brief overview of:

- the Y2K problem
- who and what it could affect
- the basics of checking systems
- the actions being taken by the Federal government
- the actions that you should take now

Sections 2–5 provide more detailed information on:

- assessing risks
- testing systems
- developing consequence management plans

1. GETTING STARTED

These days, almost every newspaper and magazine has printed articles about the Year 2000 or "Y2K" problem. Some of these stories are downright scary. They predict massive failures of power systems, transportation networks, communications, and other systems at the stroke of midnight, December 31, 1999.

Are they right about what will happen? And if the stories are true, or even partly true, is there anything you can do about it?

The message of this guide is simple:

> **You CAN get control of the problem through planning and preparation — the same kind of planning and preparation you do regularly in your work as an emergency manager.**

As an emergency manager, your primary focus should be on protecting public safety and health if Y2K-related incidents occur. This guide will help you in the process. It describes the nature of the Y2K problem and explains what you can do to prepare for it. In a nutshell, you need to take the following steps:

- **Assess risk** – Get a handle on the size of the problem, both in your communities and in your emergency response agencies.
- **Keep your own agency running** – Make sure your own systems are prepared for the transition to the new century, and be sure to plan how you will operate if some of your systems do have problems.
- **Develop a consequence management plan** – Prepare a plan for protecting public safety and health if systems in your community have problems and you must respond.

What Is the Y2K Problem?

The Y2K technology problem, also called the "millennium bug," is something we have inherited from the early days of computers. Back then, computer memory was scarce and expensive, so programmers used a 2-digit entry to designate each year instead of a 4-digit entry. For example, 1999 was entered as 99.

Unfortunately, the 2-digit date format cannot process dates in two different centuries. So when the year 2000 arrives, systems that have the 2-digit year codes may interpret the year "00" to be "1900." These systems simply cannot tell the difference between the years 2000 and 1900 unless they have been fixed ahead of time.

However, 1/1/2000 is not the only critical date! In fact, some experts believe that as few as 8% of Y2K problems will occur on 1/1/2000; the rest will occur at another time. See *Section 2* for other dates of concern.

Who Could Be Affected?

Any person using or communicating with a computer or computer-driven product or system could be affected. Remember that the systems that could be affected are not just the actual "computers" or computer software. Any equipment with "embedded" computer chips could be affected.

Table 1. Some Infrastructure Systems at Risk

Building and Security	Elevators, electronic locks, burglar and fire alarms, sprinklers, photo surveillance equipment, HVAC equipment, parking lot barriers, equipment maintenance scheduling services, and card lock systems
Communications	Radios, mobile phones, fax and telex machines, telephones and switches, pagers, closed-circuit TV cameras/monitors, intranets, and internets
Emergency Services	911 (dispatch and public warning), weather warning devices
Finance	Banks, cash machines, and credit cards
Food Service	Refrigeration, freezing, ice-making, and distribution
Health	Hospitals, pharmacies, nursing homes, emergency medical services and equipment
Office	Time clocks and stamps
Public Response	Police, fire, and emergency medical services and public works
Transportation	Roads (traffic light controllers and vehicle operations), air, and railroads
Utility Power	Electric (generation and distribution), gas and oil (pipelines and distribution)
Water and Sewage	Distribution and wastewater treatment

What Infrastructure Systems Could Be Affected?

Progress is being made daily in ensuring that systems are Y2K compliant. Still, failures could occur in many kinds of systems that matter to emergency managers. Table 1 shows some of the systems and associated devices that could be affected.

The interconnectedness of many of these systems creates part of the risk associated with the Year 2000. As a result, you need to evaluate all systems, not just your own computer systems, for Y2K compliance. *Section 2* contains more information on these at-risk systems.

Why Should I Be Concerned about the Year 2000 Problem?

The computerized systems that may fail as a result of the bug could have an impact on your community — the same kind of impact as a natural or man-made disaster. For example, if electrical systems fail, people may need shelter, food, water, information, transportation assistance, financial help, etc.

Progress is being made daily to minimize the public safety and health impacts of potential Y2K disruptions. The all-hazards practices and techniques you routinely use for other disasters and emergencies should well serve our nation in planning for the potential consequences of Y2K conversion.

As an emergency manager, you need to understand the problem, be prepared, and be ready to provide help. You need to protect systems within your own organization, so it remains operational. Also, you should promote action on the Y2K issue in your communities. Include action by all of your communities' critical service providers.

How Can I Verify That All My Systems Are OK?

Start by checking all levels of computer technology in your systems and organizations. Begin with the systems that are most critical to your agencies' ability to function. Problems can occur in any of the levels shown in Table 2, even though the other levels are OK.

See *Section 3* for more information on these levels of technology and what to do about them.

Table 2. Levels of Computer Technology

Hardware	The chip architecture and the machine's internal clock
Operating Systems	Even some recent operating systems require upgrades
Databases	All of the files and data used by your applications
Applications	Software and word processors, spreadsheets, geographic information systems, and hazard models
Custom Code	The code built on top of applications
Embedded Systems	Many devices contain computer chips. Get information from suppliers. If you cannot, you might implement planned replacement/upgrades or devise a way to work around the failed device.

What Kinds of Plans Do I Need?

This guide promotes "Contingency and Consequence Management Planning." The Y2K community uses the term "contingency planning" to reflect the uncertainty regarding Y2K disruptions. "Consequence management planning" for specific hazards is a more familiar term to the emergency management community.

If you have an all-hazards emergency operations plan, you can use this guide to develop a hazard-specific Y2K attachment to it. If not, you can use this guide to develop a stand-alone Y2K plan.

Which Functional Areas Need Plans?

Your job will be to help maintain public safety and health. To do that, you must maintain normal operations as much as possible. To respond to disruptions, you may need to activate plans for operational continuity or consequence management.

Be sure you have plans to deal with disruptions in the following areas. Some mainly affect your own operations or the public. Others affect both. But all are important.

- Emergency services
- Emergency Operations Centers (EOCs)
- 911 systems
- Public warning and information
- Health services
- Communications
- Utility power
- Water and sewage
- Public works and facilities
- Transportation

How Do I Develop a Contingency Plan?

Planning for either continuity of operations or consequence management has four basic steps:

- ❑ Identify the problem areas
- ❑ Develop the plan
- ❑ Test it
- ❑ Implement the plan

These steps will help you deal with potential Y2K problems and help you find a stable, workable solution. In *Sections 3 and 4*, you will be guided through this important process.

When Should I Plan?

Start now! Just as when you develop plans for other hazards, you must allow enough time to test your plan before you need to activate it. We can't tell you which time frames to use, because communities vary widely in size and complexity. States and many local governments have already begun this process.

If you are just beginning, here are some possible time frames for phases of the planning process:

Identify the problem areas	February – March 1999
Develop the plan	March – May 1999
Test the plan	
Train response personnel	June – July 1999
Conduct drills and exercises	July – November 1999
Revise the plan as needed	Up to November 1999
Implement the plan	
Inform the public	February 1999 – January 2000
Acquire resources	May – June 1999
Activate the plan	December 1999 – January 2000

How Can I Promote Community-Wide Readiness?

Some of the most important work in emergency response takes place at the State and local levels. You have a key role in assuring preparedness — right now!

As you assess the possible consequences of Y2K conversion, you should work with critical service providers in your area — both public and private. Encourage them to take steps to ensure that their systems are Y2K compliant. State officials should reach out to local governments to determine their progress. Encourage them to inform the public about the status of key services — like power and water — and about how local officials are preparing to respond to any disruptions.

How Can I Help the Public Prepare?

To relieve anxieties and help people prepare for Y2K, you should conduct public outreach. Tell people that government at all levels, as well as business and industry, are working together to solve the problem and ensure that public health and safety services won't be disrupted when the new millennium starts.

Distribute brochures on Y2K through schools, local employers, public meetings, and community groups. Encourage people to get more involved in all-hazards emergency planning and help them understand the emergency procedures that are already in place. See *Section 4* for a list of helpful brochures.

In addition, you may want to suggest to the public these preparations for Y2K:

- Checking with manufacturers of any essential computer-controlled equipment in the home
- Preparing basic emergency supply kits
- Checking home smoke alarms and buying extra batteries
- Keeping a battery-operated radio or television available to be able to receive emergency information

Tell the public that they should prepare for Y2K disruptions in the same way they prepare for other problems, such as winter storms or tornadoes. For more information, see *Section 4.* FEMA's Community and Family Preparedness Program offers resources to help individuals and communities in emergency preparedness.

What Else Can I Do?

Work with your communities to develop Y2K awareness. Be sure that you are included in local planning groups; or volunteer to lead these groups if necessary. Develop a common message for public dissemination on local Y2K preparedness.

Once you have developed a contingency plan, you should develop an incident management plan in case failures do occur. Within your own organization, make sure that you have protocol information for contacting local or state emergency management officials if communication systems are affected. Decide whether you should activate your EOCs during the transition.

What Is FEMA Doing to Prepare for Nationwide Response?

FEMA is involved in several activities to prepare for Y2K. These include:

- Chairing the Emergency Services Sector Working Group of the President's Council on Year 2000 Conversion
- Conducting Regional Interagency Steering Committee Y2K workshops in all ten Regions: February – March 1999, August – September 1999, and December 1999
- Developing a short course on Y2K for State and local emergency managers
- Conducting Emergency Educational Network broadcasts on Y2K, March 1999 through January 2000
- Establishing a Y2K information clearinghouse
- Conducting Federal monitoring operations December 29, 1999 – January 4, 2000

Because of the potential for numerous, small-scale emergencies across the country, State and local response teams may be overwhelmed in their efforts to save lives and protect property, public health, and safety. Consequently, FEMA is currently developing an Operations Supplement to the Federal Response Plan (FRP) that describes the federal actions and operations that are needed to respond to the possible consequences of Y2K.

This supplement will address federal response operations beyond the current scope of the FRP — operations necessary to deal with the unique circumstances presented by Y2K problems. It will also cover the monitoring actions that FEMA will take prior to the millennium. The Operations Supplement is scheduled to be published by July 1, 1999.

However, FEMA assistance cannot substitute for personal responsibility taken by individuals and organizations to address their own situations. FEMA cannot prevent computer disruption beyond its own agency, nor can it respond to the underlying technical causes of computer disruption. In addition, there may be competing demands for resources if Y2K problems arise simultaneously across the nation. So States and local communities must be prepared to be self-sufficient for a period of time if Y2K disruptions are serious.

How Are State and Local Governments Addressing the Problem?

State, county, and local governments are working hard to address potential Y2K problems. Along with checking that their own computer systems are Y2K compliant, they are developing contingency plans to address potential failures in public and private services. Organizations with successful Y2K programs have:

- Gained the interest and support of high-level management
- Established and used commissions and planning or working groups to coordinate efforts
- Developed Y2K guidebooks or manuals to help government, business, industry, and individuals understand and deal with Y2K problems
- Examined and strengthened mutual aid agreements
- Initiated public outreach programs

Where Can I Find Useful Information about the Y2K Problem?

A lot of information has been generated about this problem. It is available from agencies and organizations, is located in books and magazines, and can be found on the World Wide Web. Finding information about relevant emergency management concepts and practices, however, can be both time-consuming and frustrating, since so much information is available. *Section 5* contains an annotated list of some information sources that can be useful to emergency managers.